

■ Air Conditioning System Functional Test

Overview:

Defective HVAC systems are very expensive to repair and negatively effect a suppliers reputation. Sciemetric's 3600 HVAC Test System functionally tests all units in production using leading-edge analysis technology to identify defects and ensure that only good HVAC systems are shipped.

Benefits:

- Ability to identify defective parts before they are shipped to customers
- Consistent, verifiable results
- Dramatically reduced warranty costs
- Greater customer satisfaction

Challenge

A major HVAC manufacturer was experiencing a serious bottleneck in production testing. The conventional test system they were using had a very long cycle time and was not detecting many defects. These deficiencies were eventually discovered at the automotive assembly plant, resulting in massive warranty charge backs. Production costs escalated and customer relations deteriorated as the HVAC manufacturer struggled to find a solution to its quality control problems.



Solution

The HVAC manufacturer significantly improved the quality of shipped product by installing Sciemetric's comprehensive 3600 HVAC Test System. Our thorough testing process uses advanced testing technology to accurately assess the performance and quality of all major HVAC components including the Blower Motor, Actuators and Evaporator Probe.

The Blower Motor is ramped up and the current waveform is compared against user defined limits to determine if the blower motor is working properly. A noise and vibration (NVH) test is performed with a laser vibrometer to ensure that there are no foreign objects trapped in the fan blades and that the Blower Motor noise level complies with customer specifications. This method of testing requires no direct contact with the HVAC system resulting in less fixturing and greater test accuracy.

To ensure that the temperature probe is working properly it is compared to a master temperature probe. The difference in temperature is compared against user defined limits. The actuators are cycled through their full travel and the current waveform is collected. The current waveform is analyzed using six different tests and the results are compared against user defined limits to determine if the actuators are functioning properly.

The 3600 has the ability to interface directly with the Head Control unit or Integrated Circuit from the vehicle to simulate actual operating conditions. This allows the 3600 to test each HVAC unit in a real-world manner and find defects on the production floor before the end user would discover them under operating conditions.

The manufacturer also installed Sciemetric's QualityWorX Product Quality Intelligence System to archive all test data including full test waveforms of each HVAC system. Using birth history data they were able to consistently track compliance with their customers' manufacturing specifications. This world-class system provided our client with full manufacturing traceability and an unparalleled warranty management tool.

Achievement

By integrating Sciemetric's 3600 HVAC Test System into their manufacturing process our client reported a dramatic reduction in after-sales warranty claims. They virtually eliminated warranty charge backs and shipped product with confidence knowing it was defect-free. The rapid test cycle also improved profitability by removing critical production bottlenecks. The 3600 is a complete HVAC testing solution that simultaneously improves product quality, generates higher throughput, lowers production costs and increases customer satisfaction.

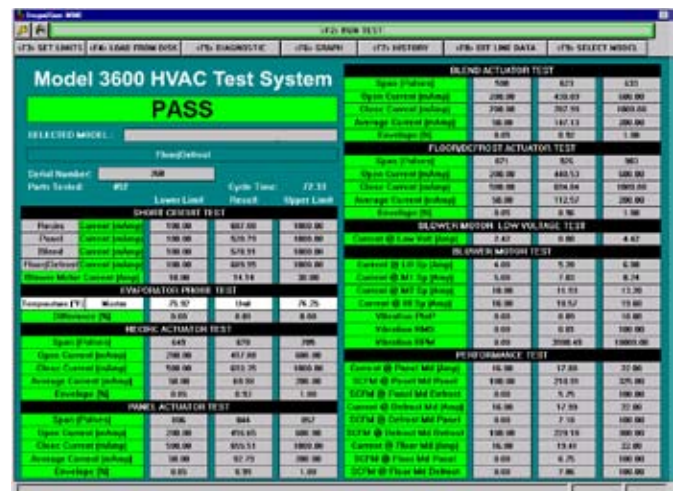


Figure 1 Screen shot of 3600 System user interface

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